DR VANESSA SAMMONS

NEUROSURGEON

Guide to

THORACIC OUTLET SYNDROME

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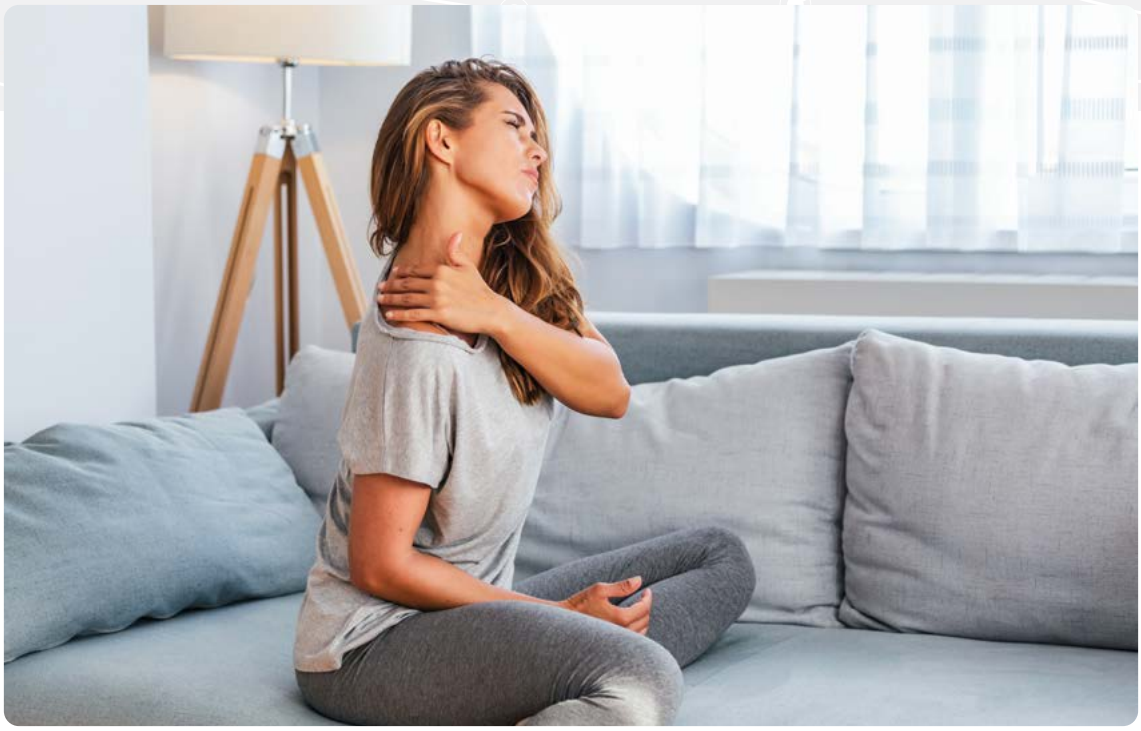


KEY FACTS

- Thoracic Outlet Syndrome is a condition that occurs when the nerves and blood vessels that control the arm are squeezed (compressed)
- It can be caused by repetitive arm motions, inflammation due to an injury to the neck or collarbone, and the particular anatomy of each person
- Symptoms include weakness in the arm, pain, and swelling
- Treatment options include physical therapy, medications, and surgery
- Recovery time varies from as little as four months to as long as two years, depending on the severity of the injury and the treatment plan

WHAT IS THE THORACIC OUTLET?

The thoracic outlet is the space that allows nerves and blood vessels to travel from your chest to your arm. The passageway is comprised of the first rib, the collarbone, and neck muscles.

WHAT IS THORACIC OUTLET SYNDROME?

Thoracic Outlet Syndrome (TOS) is a compression neuropathy. Pressure against the nerves, arteries, and veins that pass through the outlet causes pain and weakness in the arm and pain in the shoulder or neck. It affects people of all ages and genders and may be seen in athletes who perform repetitive motion that inflames the thoracic outlet.

There are different types of TOS, each requiring a different therapeutic approach:

- **Neurogenic TOS** – Nerve compression in the brachial plexus (90% of thoracic outlet syndrome patients suffer from neurogenic TOS)
- **Arterial TOS** – Compression of an artery (Only about 1% of cases fall into this category)
- **Venous TOS** – Compression of a vein that can lead to upper body thrombosis (Approximately 5% of cases are venous)

WHAT ARE THE SYMPTOMS OF THORACIC OUTLET SYNDROME?

Symptoms of thoracic outlet surgery differ depending on the nature of the injury:

Arterial TOS Symptoms

- Blockage (thrombosis) in an artery located in the hand or arm
- Cold hand
- Pain in the arm and hand, especially during overhead arm movement

Neurogenic TOS Symptoms

- Pain/weakness in arm and shoulder
- Pain/tingling and weakness in fingers
- Pain that is worse when the arm is held up

Venous TOS Symptoms

- Blue tinge to the arm and hand
- Oedema of the fingers, hand or arm
- Painful tingling in the arm or hand
- Unusually prominent veins in the hand, shoulder, and neck

WHAT CAUSES THORACIC OUTLET SYNDROME?

TOS may be the result of a congenital abnormality such as an extra rib on the cervical spine or abnormal formation of the first rib. It's more likely to occur as a result of:

- **Repetitive Overhead Motions** – People whose jobs (hairstylists, auto mechanics) or social activities (swimming, softball) require they raise their arms repetitively
- **Bodybuilding** – As muscle mass builds, especially in the neck, the nerves and the subclavian vessels may be compressed
- **Tumour** – Though rare, a tumour in the neck can lead to a compression
- **Weight gain** – Extra fat in the neck may also compress nerves and vessels
- **Whiplash** – The physical trauma of whiplash can lead to symptoms in the hand and arm that persist long after the initial injury

WHEN SHOULD I CONSULT A DOCTOR?

Don't hesitate to call your doctor if you suspect you are experiencing symptoms of TOS. If you delay treatment for thoracic outlet syndrome, it can lead to:

- Permanent nerve damage
- Permanent arm pain and swelling

There are treatments for every kind and every stage of TOS. If your symptoms are mild, simple lifestyle changes may be all that's needed to alleviate them. A timely consultation with your doctor can help you identify the exact nature of your problem and determine the best course of action to relieve your symptoms.

HOW IS THORACIC OUTLET SYNDROME DIAGNOSED?

A physical examination in conjunction with a discussion of your medical history will give your doctor the foundation for your diagnosis. If Thoracic Outlet Syndrome is suspected, your doctor may also recommend:

- **Evaluation by a neurosurgeon** like Dr Sammons to rule out cervical spine problems or nerve compression elsewhere, and other possible causes
- **Chest x-ray** to eliminate cervical rib abnormalities as a cause
- **CT scan** of the chest and/or spine to rule out pressure on the cervical spine
- **MRI** to view blood vessels and nerves
- **Nerve conduction study** to evaluate motor skills and sensory nerve function

These tests are non-invasive and help identify the cause of TOS symptoms so that your doctor can develop a treatment plan.

HOW IS THORACIC OUTLET SYNDROME TREATED?

TOS does not resolve on its own. If symptoms are mild, non-surgical treatments are the first step. For more advanced cases, surgery is required.

Treatment of Neurogenic TOS

- Physical therapy
- Over-the-counter pain medications
- Prescription muscle relaxant
- Nerve blocking injections, Botox injections
- Surgery to cut the small muscles of the neck and remove the first or cervical rib

Thoracic outlet decompression surgeries typically take up to two hours. An incision is made to give the surgeon access to the thoracic outlet. The muscles

causing compression of the nerves and vessels are cut, as well as the first rib if it's part of the problem. Surgeons may sometimes be required to remove additional structures to create sufficient space for nerves, veins, and arteries.

Surgery is performed with anaesthesia and may require up to a 3-day hospital stay, depending on the specific surgical techniques employed. The surgical wound is closed with self-dissolving stitches that are under the skin.

WHAT CAN I EXPECT AFTER THORACIC OUTLET DECOMPRESSION SURGERY?

Studies have shown the success rate of surgery for TOS to be reasonable. Success depends somewhat on choosing the patients who will benefit from surgery compared to other treatment options.

- **90% of patients with neurogenic TOS** experienced relief of pain and sensory disturbances, but only 50% enjoyed relief of muscle weakness

When your surgery is complete, you will be taken to a recovery room. Your progress will be monitored. Most patients are drowsy when they wake up, with numbness that turns to discomfort (which can be treated) at the surgical site. Dr Sammons may recommend all or some of the following:

- Pain medication
- Wearing an arm sling
- Physiotherapy to improve mobility, strength, and range of movement

WHAT ARE THE RISKS OF THORACIC OUTLET DECOMPRESSION?

All surgeries carry a certain amount of risk related to anaesthesia and breaching the skin. Risks related to decompression surgery include:

- Bleeding
- Collapsed lung
- Lymphatic fluid leakage
- Nerve injury

The possible consequences of not having surgery, including permanent pain and weakness, outweigh the risks for most patients.

WHAT SHOULD I DO AFTER SURGERY?

Home care is an important part of recovery as it can help improve the outcome of your surgery. You will be given guidelines which should be followed carefully.

These may include:

- Do not remove your bandage until instructed, but do keep it clean and dry
- Take pain medication to reduce pain and inflammation
- Commit to physical therapy
- Call your surgeon if your wound becomes swollen or your pain increases
- Do not lift anything heavier than 5kg for 4 weeks

SHOULD I FOLLOW UP WITH DR SAMMONS AFTER SURGERY?

Absolutely. Dr Sammons will want to see you for a follow-up visit 4-6 weeks after surgery. A practice nurse will reach out to you during the week after surgery to schedule your follow-up. After that the practice will set up a schedule of appointments until your recovery is complete.

Should you have any concerns, be aware that Dr Sammons is happy to talk and meet with you earlier to address them.

DOES THORACIC OUTLET SYNDROME COME BACK?

Clinical trials found recurrent symptoms develop in 15% to 20% of patients undergoing either first rib resection or scalenectomy for thoracic outlet syndrome.

The majority of patients who undergo surgery have their symptoms resolved. It may take 4 to 5 months for strength to return and up to two years for symptoms related to surgery, not TOS, to vanish. During recovery, patients should avoid activities that contribute to the condition which can recur.

Please call our rooms if you have any additional concerns or questions.

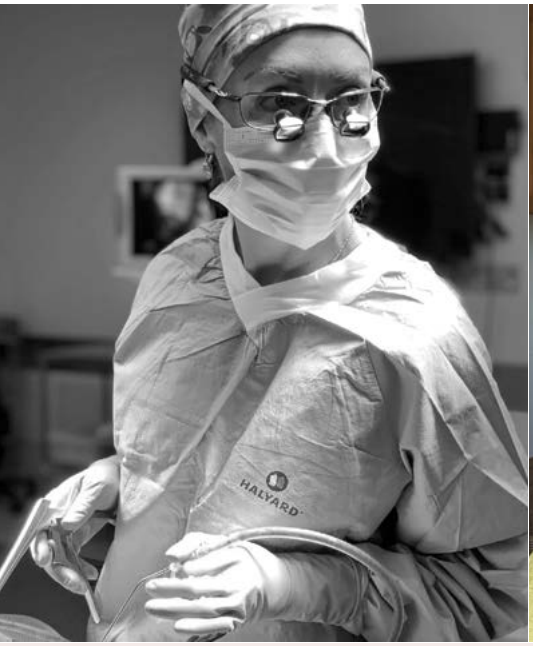
Hello!

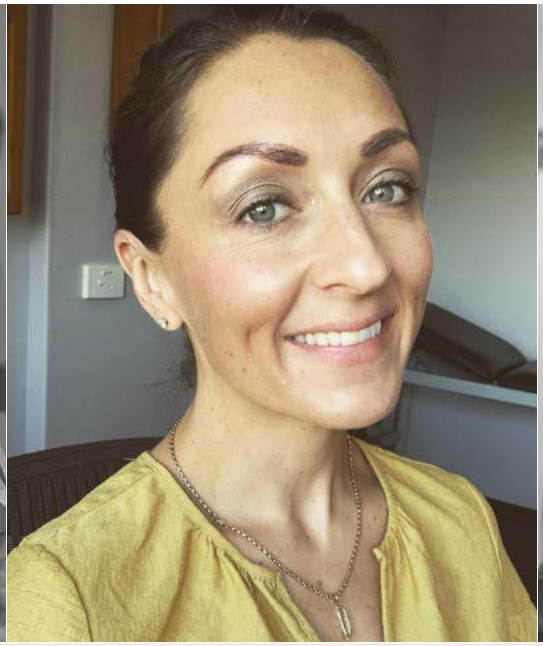
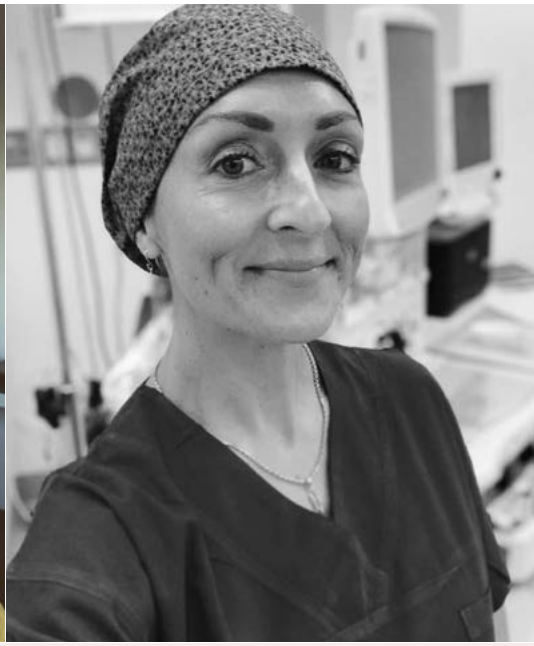
I'm a Neurosurgeon at North Shore Private Hospital, Gosford Private Hospital, Brisbane Waters Private Hospital and the Sydney Adventist Hospital. I treat all neurosurgical conditions, but with a particular interest in Peripheral Nerve Surgery. I pride myself on providing personalised and thoughtful patient care and utilising my skills to achieve the best outcome possible.

I believe that a great neurosurgeon will ensure you feel listened to, will ensure that you understand what your surgery involves, and should also work together with your GP to achieve the best outcome for you.

Dr Vanessa

MBBS (Hons) MPhil FRACS (Neurosurgery)



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